

Use of Compact Foods in Emergencies

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The number and size of emergencies are escalating at an alarming rate. Today approximately 34 million uprooted people worldwide require food and humanitarian assistance from the international donor community. During the initial stages of an emergency, the logistics of procuring, delivering and storing traditional commodities such as bagged foods are demanding, particularly in remote and physically insecure areas. Increasingly, relief agencies are using compact foods- a term used to cover a range of products such as fortified biscuits, compressed food bars and nutrient dense pastes- that are transported easily and can be consumed immediately.

There are a growing number of emergency compact food products on the market. Yet, there are few guidelines on the use of compact food products. The guidelines that do exist tend to be contradictory and confusing.

This technical note is based on a paper on the use of compact foods in emergencies written at the request of the United States Agency for International Development for the National Academy of Sciences (NAS).¹ It provides a brief overview of the growth of compact foods in emergencies and seeks to highlight the key issues and considerations on the use of compact foods and to identify gaps. The focus of this note is on compact foods used for the whole population in the initial stages of an emergency. Compact foods designed specifically for selected groups such as the severely malnourished are mentioned but not discussed in detail.

The Emergence of Compact Foods

Compact foods have a long history of use in situations of limited food supply. Compact foods have been widely used as military rations, lifeboat and survival rations for expeditions. In the 1970s, the Red Cross began using milk biscuits in emergency situations, primarily in selective feeding programs for children. In the 1980s, the widespread use of high-energy/protein biscuits (HEBs) in emergency relief feeding programs led to an increase and varied supply available on the market. For example, a total of 29 different brands of biscuits were identified in the feeding camps throughout Ethiopia and Sudan during this period. Although biscuits were intended to supplement a basic diet, it was found in one area of Ethiopia that biscuits were the sole source of food for many families for up to three months.

The term “compact food” is used to cover a range of “ready to use” products such as fortified biscuits, compressed food bars and nutrient dense pastes, that are transported easily and can be consumed with minimum preparation.

Based on a review of imported biscuits in relief programs by OXFAM in the 1980s, the only formal review to date, it was concluded that biscuits have a limited but useful role to play in emergencies. Biscuits were found to be useful in the early stages of an emergency when few resources are available for the preparation of food, such as water, equipment and personnel. Oxfam developed its own specifications for a high energy biscuit. At 125 kcal/biscuit, it was the most energy dense biscuit available.² Oxfam no longer uses this product. Other products originally developed for specific purposes were found to be useful in emergencies. The compressed food bar, BP5, was developed by the Norwegian Navy and manufactured by Compact as rations for lifeboats, thus explaining the long shelf life and water-resistant packaging. Since the

1980s, UNICEF has distributed a large amount of BP5 and continues to do so.

In the 1990s, the U.S. Department of Defense developed the Humanitarian Daily Ration (HDR) as a short-term ration to be used during the initial phase of an emergency. The HDR was based on the concept of the Meals Ready to Eat (MREs) and was designed to specifically meet the needs of civilians in humanitarian relief efforts. The purpose of the HDR is to “provide extra energy and high protein in a daily ration to maintain a malnourished person’s health at a stable level for short periods of time (30-60 days) until foods can be provided through traditional relief efforts. The HDR is a stop gap feeding asset.”³ The HDR contains no animal products and is considered

acceptable for all ethnic and religious groups. HDRs contain vegetable entrees, crackers, jelly and other items such as tea bags, and condiments.

Comparisons of existing compact food products used in emergencies can be found in Tables 1 and 2. A comparison of the macro and micronutrient content of commonly used compact foods can be found in Table 3.

Compact products have been specifically developed for use during the rehabilitation (‘rapid catch up’) phase in the treatment of severely malnourished adults and children. Two products are currently available, BP100 (a compressed bar made by Compact) and Plumpy-nut (a peanut paste in a sachet made by Nutriset). These products are often referred to as “ready to use therapeutic food” (RUTF).⁴ Recent studies have found that RUTF can be used successfully in certain situations for at-home and community-based programs.^{5 6}

¹ Caroline Grobler-Tanner, *A Study of Emergency Relief Foods for Refugees and Displaced Persons* (Washington, D.C.: FANTA Project, Academy for Educational Development, 2001).

² H.Young et al., “Development of a High Energy Biscuit for Use as a Local Food Supplement in Disaster Relief,” *Journal of Food and Technology* 20 (1985): 689-695.

³ USAID’s Office of Foreign Disaster Assistance, *Field Operations Guide* (Washington, D.C.: 1998).

⁴ The nutritional composition of BP100 and Plumpy-nut are based on the F100 formula. F100 is specifically designed for use during the rehabilitation phase of treatment after appetite has returned. They have the same nutritional value per 100kcal as F100. See Action Contre la Faim, *Treatment of Malnutrition in Emergency Situations* (2002).

⁵ A. Briend et al., “Ready to Use Therapeutic Food for the Treatment of Marasmus,” *Lancet* (1999) : 353.

Table 1. Existing Products Used in Emergencies: At a Glance Comparison of Form, Kcal and Cost

PRODUCT NAME [Producer]	SHELF LIFE PACKING CONFIGURATION	KCAL/ 100g	COST \$/MT
BP5 Compact Food [COMPACT Norway]	SHELF LIFE: 5 years with minor decrease in vitamins PACKING: Packed under vacuum in air- and watertight aluminum foil bag. Bag protected by water repellent cardboard box resistant to germs, insects and rodents. 24 units of BP5 packed in polyethylene coated solid board carton. Pictograph explains usage CONFIGURATION: Compressed tablets of 27.8g. Each unit of BP5 (500g net)=18 tablets wrapped in 9 bars with grease-proof paper	458kcal	\$3,565
Mainstay 3600 Compact Food [Survivor Industries U.S.]	SHELF LIFE: 5 years PACKING: Pouch heat-sealed under vacuum CONFIGURATION: Nine pieces in a cohesive bar	517kcal	\$3,400
High Energy Biscuits (various names*) [WFP; BISCA, Denmark; House of Manji, Nairobi; UNICEF; Oxfam UK]	SHELF LIFE: Average 18 months. 5 years when packed in metal tins PACKING: Moisture barrier and outer container (cardboard, plastic or tin). Biscuits with high fat content require light-proof, airtight packs to avoid rancidity. Can be foil wrapped in packs of 200-250g in cartons. Weighted plastic "snowdrop" for airdrops at high altitude CONFIGURATION: Square or round conventional biscuit/cookie. Number/pack varies	450kcal	\$1,000 + \$200 in metal tins \$1,500 for snow drop
Plumpy Food [Nutriset, France]	SHELF LIFE: 12 months PACKING: Vacuum packed in foil wrappers CONFIGURATION: Individual sachets	545kcal	\$3,976
HDRs [U.S. Department of Defense]	SHELF LIFE: 2-5 years PACKING: Tough plastic waterproof bag. Food contained in individual vacuum-sealed packets. CONFIGURATION: Contains 2 entrees, 5 complimentary products	N/A Approx. 2000 kcal ration	\$2,194

⁶ M. Manary et al., "Home based therapy for childhood malnutrition with ready to use food," [Lancet (2002), under review].

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*High energy biscuits are manufactured for WFP. The product manufactured by BISCA, Denmark is currently considered the most popular. Fambix is made by the House of Manji and widely used in East Africa. All high energy biscuits manufactured by WFP must meet the minimum specs (see Table 3). UNICEF distributes HEBs manufactured by various manufacturers. Jamin B and Jamin D are manufactured in Norway and used by European NGOs. All HEBs have a similar nutritional composition. HEBs previously manufactured for OXFAM UK had the highest energy density 125/100kcal.

These products are designed for use where:

- the security situation makes it impossible to run a therapeutic feeding center;
- take-home food is required during nights and weekends when therapeutic feeding centers are closed;
- at-home treatment is appropriate during the rehabilitation (rapid catch up) phase; and/or
- severely malnourished people are unable to come to a center or refuse a milk-based liquid diet commonly fed to children and demand solid food.

Considerations in the Use of Compact Foods

There are several key factors to consider in determining the use of a compact food: timing and length of use, cultural context, nutritional requirements, cost, the special needs of infants and children, and packaging and labeling.

Timing and Length of Use

There is a critical niche for compact foods during the initial stage of a crisis, particularly when people are on the move. Compact foods can be very useful as a stop gap general ration before the food basket is established and where populations have limited access to water and cooking fuel. They may be particularly useful in insecure areas.

When compact foods are used as “stop gap” rations during the initial stages of a crisis, it is critical that the rations are delivered to the affected population on a timely basis (within 48 hours). A delay in the arrival of compact foods can result in considerable wastage if the pipeline is established before the compact foods arrive. However, it often takes several weeks to establish a pipeline resulting in a full general ration. This delay can result in the affected population becoming increasingly malnourished and micronutrient deficiencies may arise. Thus the timely arrival of a suitable compact food can bridge the gap, correct nutritional deficiencies, and mitigate the need for costly targeted feeding program interventions.

The recommended length of time that compact foods can be used as a sole source of food varies according to the product. The range recommended by the manufacturers of various products is between two and thirty days. Anecdotal

evidence and field experience suggests that for program planning purposes, compact foods can be used for up to fifteen days as the sole food source. In practice, however, a recommended period of fifteen days is unlikely to be adhered to given the exigencies of emergency situations. Compact foods used as a general ration to the whole population should transition out after the food basket becomes established and recipients adapt to their situations.

Compact foods may also be used beyond the initial stages of an emergency. Compact foods such as BP5 and high energy biscuits are widely used in selective feeding programs. They can be an effective means of delivering a high energy and nutrient supplement to people outside of formal programs (take-home supplements at night or to people who cannot or refuse to come to feeding centers). Compact foods may also be used in some circumstances, as a vehicle for delivering micronutrients.

Meeting Requirements of Nutritionally Vulnerable Populations

A compact food used in the initial stages of an emergency should be a complete wholesome food that contains all the essential nutrients in sufficient amounts to meet the entire nutritional needs of the total recipient population. A complete food may help prevent the onset of nutritional deficiencies and ameliorate outbreaks of epidemic illness. It may also negate the need for costly and disruptive selective feeding programs.

The planning figure for energy in emergency rations is 2100kcal/person/day. There is still some discrepancy regarding the minimum energy requirements for this critical period. Current recommendations from the manufacturers of some

Box 1. Advantages and Disadvantages of Ready to Eat Compact Foods

ADVANTAGES

- Require no preparation and therefore no additional resources are required to prepare food (fuel, cooking and serving equipment, water and trained personnel)
- A long shelf life and can therefore be pre-positioned for preparedness
- Low moisture content limits microbial growth
- Energy and nutrient density means a high weight/volume ratio
- Easy to handle, transport and distribute
- Can be dropped by air

DISADVANTAGES

- Expensive compared with traditional bagged ration items
- May be attractive as a combat ration and thus prone to diversion
- May be culturally unfamiliar and thus prone to wastage
- Difficult to open and dispose of outer wrappings without a knife or scissors.
- May be commercially tradable and not consumed directly
- Lack of guidance can lead to poor coordination and erratic use

compact food products use 1500kcal in recommending how much of the product to provide in a general ration. However, evidence suggests that people in the initial stages of an emergency have greater energy and nutrient requirements.⁷ A higher planning figure for a general ration, such as that recommended by the International Committee of the Red

Cross (ICRC), takes into account the fact that many people may be malnourished or ill prior to the onset of a relief operation. The physical vulnerability of displaced populations also may be exacerbated during the early stage of an emergency by losses of food during transport, diversion, sales and bartering and anticipated shortfalls in the food pipeline.

⁷ Requirements for nutritionally stressed populations and recommended levels for the USAID Emergency Food Product (EFP) are discussed in an additional background paper for the National Academy of Sciences Institute of Medicine. See Michael Golden, *The Derivation of the Proposed Nutritional Composition of an Emergency Relief Food for Refugees and Displaced Persons* (Washington, D.C.: FANTA Project, Academy for Educational Development, 2001).

Table 2. Comparison of Recommended Use, Advantages and Disadvantages

PRODUCT NAME [Producer]	RECOMMENDED USE	ADVANTAGES	DISADVANTAGES
BP5 Compact Food [COMPACT Norway]	First phase of a relief operation for short periods where people require a compact energy source Air-dropping in inaccessible areas Take home ration in feeding programs Repatriation operation Preparedness stocks As an interim supplement	Needs no preparation before use Universally accepted Suitable for children >6 months, pregnant and lactating women, and malnourished people Widely used in field Eaten as a biscuit or porridge Robust packaging	Thirst provoking, too dry High satiety value Difficult to dispose of Difficult to open Attractive as combat ration
Mainstay 3600 Compact Food [Survivor Industries U.S.]	For use in specific situations where BP5 is considered appropriate	Needs no preparation before use	Concerns regarding nutritional composition and use of additives Discarded by recipients in field Packaging difficult to dispose of Attractive as combat ration
High Energy Biscuits (various names*) [WFP: BISCA, Denmark; House of Manji, Nairobi] [UNICEF, Oxfam UK]	Emergency rations in the first few days of a crisis Carried by returnees or populations during transit Use in feeding programs for night feeds, take home supplements and encouraging appetite Air-dropping in inaccessible locations	Widely acceptable and culturally recognized and appropriate Needs no preparation before use Less prone to diversion Environmentally appropriate packaging and reusable containers	
Plumpy Food [Nutriset, France]	Complement to a bread-based ration For use in emergencies where cooking is difficult	No preparation necessary High energy density	Contains peanut butter Not generic enough for wide-scale use
HDRs [U.S. Department of Defense]	Designed to meet the nutritional needs of civilians in emergencies	Contains no animal products	Expensive Difficult to open without a knife Unfamiliar to many emergency affected populations; discarded and wasted Not suitable for small children Packaging difficult to dispose of

*High energy biscuits are manufactured for WFP. The product manufactured by BISCA, Demark is currently considered the most popular. Fambix is made by the House of Manji and widely used in East Africa. All high energy biscuits manufactured by WFP must meet the minimum specs (see Table 3). UNICEF distributes HEBs manufactured by various manufacturers. Jamin B and Jamin D are manufactured in Norway and used by European NGOs. All HEBs have a similar nutritional composition. HEBs previously manufactured for OXFAM UK had the highest energy density 125/100kcal.

Cost Considerations

For comparison purposes, the cost of a compact food should be considered relative to the amount of energy delivered. This gives more nutrient dense products a distinct advantage. Compact foods are an expensive option. Perhaps the key advantage of compact foods over traditional bagged commodities is the energy density for size. Energy density will affect ration sizes and volume consumed, as well as influence distribution and storage costs.

Cost is also determined by whether the product actually reaches and is eaten in sufficient quantities by the targeted recipient. Given these and other factors, cost analysis shows that high energy biscuits (HEBs) are energy dense and cost effective. HDRs, on the other hand, are the most costly and least nutrient and energy dense.

Box 2. Cost Comparisons (prices in US\$)

Food Item(s)	Cost/ Metric Ton US\$	Cost/ Beneficiary/ 2100kcal
BP5	3,565	1.63
HEBs	1,200 (in tins)	0.55
Plumpy Food	3,200	1.28
HDRs	2,194	4.30
Basic ration*	200-300	0.14- 0.16

Cost estimates based on costs/MT provided by the manufacturer do not include shipping or airfreight. Prices are subject to foreign exchange rates

* Basic ration includes 440g of cereal, 50g pulses and 40g oil

Table 3. Comparison of Micronutrient Content Per 100g and 2100kcal of Selected Compact Foods

NUTRIENT	UNIT	REF REQS	HDRs [U.S. DOD]	BP5 [Compact]		MAINSTAY [Survivor Industries]		HEB [Various]		PLUMPY Food [Nutraset]	
		RDAs ⁸	Ration	100g	2100	100g	2100	100g	2100	100g	2100
Kcal		2100	2100 ⁹	458 kcal	460g	517 kcal	460g	450 kcal	460g	545 kcal	400g
Amount eaten/ 2100kcal ¹⁰	Bar Biscuit		1 ration	1.8 bars	8.5 bars	1.3 bars	5.3 bars	3.6 biscuits	17 biscuits	1 sachet	4 sachets
Protein	g	52-63g	45-50	14.7	67.6	3.94	15.7	12	55.2		
Fat	g	40g	38	17	78.2	30.26	121	20	92		
Vitamin A	IU	1600	2500	1567	7208	3422	13,688	1250	5750	1980	7980
Vitamin C	mg	28	41	40	184	47.0	188	30	138	125	500
Thiamine (B1)	mg	0.9	1.5	0.52	2.4	0.34	1.36	0.75	3.45	3.5	14
Riboflavin (B2)	mg	1.4	1.7	0.52	2.4	0.58	2.32	1.1	5.06	2	8
Niacin	mg	12	20	6.5	29.9	7.75	31	12	55.2	22	88
Vitamin B6	mg	2	2.8	0.87	4.0	2.41	9.64	1.5	6.9	2	8
Vitamin B12	mcg	0.9	1.25	0.9	4.1	1.5	6	0.75	3.45	2	8
Vitamin D	mcg	3.8	10	4.3	19.7	6.7	26.9	5	23	10	40
Vitamin E	mg		11.2	3.5	16.1	0.0	0.0	7.5	34.5	20	80
Folic Acid	mcg	160	400	130	598	169	676	120	552	500	2000
Pantothenic Acid	mg	10		2.2	10	12.3	49.2	4.5	20.7	6	24
Calcium	mg	500	1500	600	2760	685	2740	375	1725	560	2240
Iron ¹¹	mg	22	22	10	46	2.4	9.6	17	78.2	13	52
Phosphorous	mg	1470	1500	600	2760	490	1960	0.0	0.0	380	1520
Magnesium	mg	630		60	276	149	596	150	690	160	640
Zinc	mg	18.9		10	46	0.0	0.0	8	36.8	13	52
Potassium	mg	3990		250	1150	0.0	0.0	0.0	0.0	900	3600
Sodium	mg	1260		15	315	30.5	122	0.0	0.0	0.0	0.0
Copper	mcg	1995		200	920	0.0	0.0	0.0	0.0	1400	5600
Selenium	mcg	75.6		0.0	0.0	0.0	0.0	0.0	0.0	255	900
Manganese	umol	6.3		0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Chromium	nmol	42		0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Molybdenum	nmol	105		0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Iodine	mcg	150		100	460	0.0	0.0	100	460	80	320

Source: Manufacturers (2001).

⁸ Reference requirements are compiled from the following documents: UN World Food Program/ UN High Commissioner for Refugees, *Guidelines for Estimating Food and Nutrition Needs in Emergencies* (Rome: 1999); UN World Health Organization, *Management of Nutrition in Major Emergencies* (Rome: 2000); and Sphere Project, *Minimum Standards in Nutrition* (Oxfam Publishing, 1998).

⁹ Gaps denote unavailable or unreliable information.

¹⁰ BP5 and Plumpy Food meet most of the recommended requirements. Mainstay is very low in protein and is lacking certain micronutrients such as zinc and Iodine. HEBs are lacking in Copper, Selenium Manganese, Chromium and Molybdenum.

¹¹ Iron from a diet that provides low or very low bio-availability.

Cultural Considerations

Compact foods can be culturally unfamiliar and, at times, inappropriate. Available information and a body of anecdotal evidence suggest that the most accepted and cost effective type of compact food in both a general ration and in feeding programs is a high energy, nutrient dense biscuit or bar with little or no flavorings except sugar. Compact foods for use in emergencies should contain no meat products. The preferred cereal base from a cultural and nutritional perspective is oats or wheat.

Infants and Small Children

The needs of infants and small children and their caretakers are critical when considering the use of compact foods. Some existing compact foods are not suitable for infants under 12 months. Evidence suggests that a bar or biscuit that is easy to hold and suck and can be crumbled in water or expressed breastmilk, is most suitable for children over six months. Field experience has shown that in unsupervised general feeding, the recipient population and particularly the caregivers of infants must be informed about the intended use of the compact food. Effective labeling with pictographs is an important element in this process.

Packaging and Labeling

Compact foods require different types of packaging and labeling depending on the level of security, physical environment and mechanism for distribution.

The risk of diversion and theft of compact foods is a great and real concern. Evidence suggests that the packaging and shape of the compact food have an impact on the risk of diversion. Compact foods packed in small unit boxes or “space age” packaging (aluminum vacuum packed wrapping), are more likely to be diverted. Such packaging is also costly and can be an environmental hazard. Lessons from the field suggest that high energy biscuits in cylindrical or square packaging are less likely to be diverted. Outer packaging in lightweight, rigid metal tins extends shelf life and the larger unit is also less likely to be diverted. The metal or plastic containers can also be re-used for storage and for carrying water.

Compact foods for remote and insecure areas often require packaging suitable for dropping from high altitudes. For example, the World Food Program (WFP) uses a weighted ‘snowdrop’ or ‘flutter pack’ for drops from high altitudes.

Use of Compact Foods in the Field

Given the absence of formal review or evaluation of compact foods, a wide range of agencies and individuals were canvassed by the Food and Nutrition Technical Assistance (FANTA) Project and asked to document and share experiences of using compact foods. Findings revealed that compact foods are used increasingly frequently, but on an ad hoc basis. Key findings are summarized in Box 3 below.

Box 3: Experiences of Using Compact Food in the Field

- A biscuit-like product in shape and taste, is more likely to be eaten by beneficiaries of all ages and is widely familiar. Neutral tasting biscuits with just sugar added are less likely to be wasted. Texture is important so that the biscuit can be held by small children, but can breakdown easily in the mouth or crumbled to a porridge.
- Compressed food bars are not very popular when used as a general ration. Reasons cited for this were that they are dry, bland, hard to eat the required amount, require a lot of water and are unfamiliar to many populations.
- The small size, compactness and packaging of some products make them attractive “combat rations”. In some cases people may be afraid to carry them for fear of being attacked. High energy biscuits wrapped in simple packaging are less likely to be diverted and less attractive as combat rations because in many cases they are seen as food for women and children.
- Humanitarian Daily Rations are not cost effective and are often culturally and socially unacceptable. They are not suitable for small children. There are several examples of considerable wastage in the Balkans and most recently in Afghanistan.
- Several agencies maintain stocks of high energy biscuits for contingency planning purposes. In 1996 during the mass return of Rwandan refugees, high energy biscuits were distributed by UNHCR and NGO partners to people on the road and it was the main food that people had during their long journey back home.

Current Guidance on the Use of Compact Foods

While compact foods are widely used in emergency situations, there are few published guidelines on their use. Standard emergency guidelines make limited mention of compact foods and HEBs. Some guides and manuals only refer to one product, where in practice, field-workers use a variety of compact foods from various sources. The absence of consistent guidelines may explain why compact foods are used erratically and with mixed results.¹² Most guidelines do not recommend how much to give under what circumstances. In some cases there is a contradiction in the same guidelines. Generally, the prevailing view seems to be that compact foods (particularly HEBs) are recommended for use in feeding programs and, in extreme circumstances, distributed as part of a general ration. Unfortunately these extreme circumstances are increasingly common and the guidelines have not kept up with practical realities.

In some of the more popular field guides, there is a complete absence of recommendations for meeting the food needs of populations in the first stages of an emergency before a food basket is established or when people are on the move. Not surprisingly, the recommendations in agency guidelines vary according to institutional objectives and mandate or role. Some guidelines and recommendations briefly caution their staff against the use of certain compact foods for fear that the food may end up being diverted or looted.^{13 14}

Summary of Recommendations

Based on the available evidence and anecdotal information from field experience, compact foods for use in initial stages of an emergency should be:

- A complete wholesome food containing all essential nutrients in sufficient quantities for the recipient population.
- Energy dense at least 500kcal/100g. Sugar added for taste and to increase energy. No flavors or colors added.
- Used for a defined time period (not more than 15 days as a sole source).
- Regionally pre-positioned for immediate delivery within 48 hours of a crisis.
- Designed with a moisture content that does not affect shelf life, but does not induce thirst. Water is needed with all compact foods.
- Available in a variety of packages suitable for different situations.
- Packaged to minimize the possibility of diversion and maximize shelf life. Outer packaging should be rigid but easy to open without tools, re-sealable to avoid wastage and re-usable as storage and water containers.
- Inner and outer packaging must be well labeled and directions for use provided to program managers and the recipient population. The use of pictographs on the inner packaging is essential.

¹² F. Assefa, "The Use of BP5 in Supplementary Feeding Programs," *Field Exchange* no. 2 (August, 1997).

¹³ Medecins Sans Frontieres, *Emergency Nutrition Guidelines* (1995).

¹⁴ International Federation of Red Cross, *Handbook for Delegates* (Geneva: 1995).

¹⁵ Sphere Project, *Humanitarian Charter and Minimum Standards in Disaster Response* (Oxfam Publishing, 2000).

- Configuration should be in small individual units that are easy to hold.
- Suitable for infants and small children, such that it can be crumbled to porridge and be held and sucked by small children.
- Culturally acceptable and edible. Contain no animal fat from meat, blood products or gelatin. Oats or wheat are the preferred cereal base for nutritional and preference reasons.

It is clear that there must be a greater focus on the role of compact foods in emergencies. There is a need for the development of standard guidelines and protocols particularly for what to do in the initial stages of an emergency. To date, the nutritional requirements for displaced populations in crisis have not been internationally agreed upon. While recommendations have been published, there is no documented justification for the levels chosen.¹⁵

For further information

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